What is claimed is:

1. An optical pickup for high density recording and reproduction, comprising:

a light source unit to emit a plurality of light beams, such that a plurality of light spots are formed on a same track of an information recording surface of a recording medium;

an objective lens to focus the light beams incident from the light source unit to form the light spots on the information recording surface of the recording medium;

an optical path changer disposed on an optical path between the light source unit and the objective lens, to alter a traveling path of the light beams reflected from the information recording surface incident from the objective lens;

a photodetector to receive and photoelectrically convert the light beams incident from the objective lens and the optical path changer after having been reflected from the recording medium, and to output detection signals; and

a reproduction signal detecting circuit to delay one of the detection signals output from the photodetector to remove a time gap between the delayed detection signal and an undelayed one of the detection signals, and to sum the delayed detection signal and the undelayed detection signal, to detect a reproduction signal.

2. The optical pickup of claim 1, wherein the light source unit includes a plurality of semiconductor laser devices.

3. The optical pickup of claim 1, wherein the light source unit comprises:

a light source; and

a diffraction element to split the light beams emitted from the light source into a plurality of diffracted light beams, such that the plurality of light spots are formed on the same track of the recording medium.

4. The optical pickup of claim 1, wherein the photodetector includes a plurality of photodetector portions to separately receive and photoelectrically convert the light beams reflected from the recording medium.

5. A reproduction signal detection method comprising:

forming a plurality of light spots separated by a predetermined distance on a same track of a recording medium using a respective plurality of light beams;

separately receiving and photoelectrically converting the light beams reflected from the recording medium, to output electrical signals;

delaying one of the electrical signals to remove a time gap between the electrical signals; and

summing the delayed electrical signal with an undelayed one of the electrical signals, to detect a reproduction signal.

6. A pickup comprising:

a light source to emit a plurality of light beams, such that a plurality of light spots are formed on a recording medium;

a detector to receive and photoelectrically convert the light beams reflected from the recording medium, and to output detection signals; and

a signal detector to delay one of the detection signals output from the detector to remove a time gap between the delayed detection signal and an undelayed one of the detection signals.

7. The pickup of claim 6, wherein the signal detector sums the delayed detection signal and the undelayed detection signal, to detect a reproduction signal.

8. The pickup of claim 7, wherein the light spots are formed a predetermined distance from each other on a same track of an information recording surface of the recording medium.

9. The pickup of claim 8, further comprising:

a lens to focus light beams incident from the light source to form the light spots; and

an optical path changer disposed on an optical path between the light source and the lens, to alter a path of light beams incident from the objective lens.

10. The pickup of claim 9, wherein the optical path changer is a beam splitter or a hologram optical element (HOE).

11. The pickup of claim 10, wherein the reproduction signal equals $2S(t-\tau)+n\sqrt{2}$, wherein t equals time, τ equals a time delay of the delayed detection signal, $2S(t-\tau)$ is an information signal component of the reproduction signal, n is a noise component of the undelayed detection signal, and $n\sqrt{2}$ is a noise component of the reproduction signal.

12. The pickup of claim 11, wherein a signal-to-noise ratio of the reproduction signal is $\sqrt{2}S(t-\tau)/n$.

13. The pickup of claim 7, further comprising a diffraction element to split the light beams emitted from the light source.

14. The optical pickup of claim 1, wherein three light spots are formed and the reproduction signal detecting circuit delays the third light spot output from the photodetector as another delayed detection signal to remove time gaps between the another delayed detection signal, the delayed detection signal and the undelayed detection signal, to detect the reproduction signal.

15. The pickup of claim 6, wherein three or more light spots are formed and the signal detector delays the third light spot output from the photodetector as other delayed detection signals to remove time gaps between the other delayed detection signals, the delayed detection signal.

16. The pickup of claim 7, wherein the signal detector comprises:
a delay unit to delay the delayed detection signal; and
an adder to sum the delayed detection signal and the undelayed detection signal.

17. The pickup of claim 16, further comprising an amplifier installed to an output end of the detector to correct an intensity difference between the light spots.

18. The pickup of claim 13, wherein the diffraction element splits the light beams into split light beams having a same amount of light.

19. A pickup comprising:

a light source to emit a plurality of light beams, such that a plurality of light spots are formed on a recording medium; and

first and second detectors to receive and photoelectrically convert the light beams reflected from the recording medium,

the first and second detectors detecting the light reflected from a same place of the recording medium which is separated by a predetermined time gap.